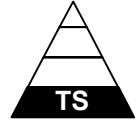


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DOE STANDARD

NUCLEAR EXPLOSIVE SAFETY FUNCTIONAL AREA QUALIFICATION STANDARD



U.S. Department of Energy
Washington, D.C. 20585

AREA TRNG

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APPROVAL

The Federal Technical Capability Panel consists of senior Department of Energy managers responsible for overseeing the Federal Technical Capability Program. This Panel is responsible for reviewing and approving the Qualification Standard for Department-wide application. Approval of this Qualification Standard by the Federal Technical Capability Panel is indicated by signature below.


Roy J. Schepens
Chairman
Federal Technical Capability Panel

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ACKNOWLEDGMENT

The Nuclear Explosive Safety Program Manager is the Sponsor for the Nuclear Explosive Safety Qualification Standard. The Sponsor is responsible for coordinating the development and/or review of the Functional Area Qualification Standard by subject matter experts to ensure that the technical content of the standard is accurate and adequate for Department-wide application for those involved in the Nuclear Explosive Safety Program. The Sponsor, in coordination with the Federal Technical Capability Panel, is also responsible for ensuring that the Functional Area Qualification Standard is maintained current.

The following subject matter experts (SMEs) participated in the development and/or review of this Qualification Standard:

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FUNCTIONAL AREA

NUCLEAR EXPLOSIVE SAFETY

PURPOSE

The Nuclear Explosive Safety Functional Area Qualification Standard establishes common functional area competency requirements for all U.S. Department of Energy (DOE) nuclear explosive safety technical personnel who provide management direction or oversight impacting the safe operation of facilities and activities associated with nuclear explosives. Satisfactory and documented completion of the competency requirements contained in this standard ensures that technical personnel possess the minimum requisite competence to fulfill their functional area duties and responsibilities.

APPLICABILITY

This Standard applies to all Department of Energy nuclear explosive safety technical personnel who provide management direction or oversight impacting the safe operation of facilities and activities associated with nuclear explosives. Personnel designated by Headquarters or Field element line management as participants in the Technical Qualification Program are required to satisfy the competency requirements of this standard as defined in DOE Order 360.1B, Federal Employee Training.

IMPLEMENTATION REQUIREMENTS

The competencies contained in the standard are divided into the following four categories:

1. Nuclear Explosive Safety Program
2. Nuclear Explosive Safety Study Group
3. General Management
4. Performance Requirements

Each of the categories is defined by one or more competency statements indicated by bold print. The competency statements define the expected knowledge and/or skill that an individual must possess and are requirements. Each of the competency statements is further explained by a listing of supporting knowledge and/or skill statements. The supporting knowledge and/or skill statements are not requirements and do not necessarily have to be fulfilled to meet the intent of the competency.

Headquarters and Field elements shall establish a program and process to ensure that all nuclear explosive safety technical personnel required to participate in the Technical Qualification Program meet the competency requirements contained in this Standard. Documentation of the completion of the requirements of this standard shall be included in the employee's training and qualification record.

In selected cases, it may be necessary to exempt an individual from completing one or more of the competencies in this functional area qualification standard. Exemptions from individual competencies shall be justified and documented in accordance with DOE O 360.1B, Federal Employee Training. Exemptions shall be requested by the individual's immediate supervisor, and approved one level above the individual's immediate supervisor.

Equivalencies may be granted for individual competencies based upon an objective evaluation of the employee's prior education, experience, and/or training. Documentation of equivalencies shall indicate how the competency requirements have been met. The supporting knowledge and/or skill statements should be considered when evaluating an individual's ability with respect to each competency requirement.

Training shall be provided to employees in the Technical Qualification Program who do not meet the intention of the competencies contained in the qualification standard. Departmental training will be based upon supporting knowledge and/or skill statements similar to the ones listed for each of the competency statements. Headquarters and Field elements should use the supporting knowledge and/or skill statements as a basis for evaluating the content of any training courses used to provide individuals with the requisite knowledge and/or skill required to meet the intent of the qualification standard competency statements.

DUTIES AND RESPONSIBILITIES

The following are duties and responsibilities normally expected of nuclear explosive safety technical personnel:

- A. Provides guidance on and interpretation of Nuclear Explosive Safety (NES) requirements and policy.
- B. Briefs and consults with Defense Nuclear Facilities Safety Board (DNFSB) staff and ad-hoc technical groups about NES principles, responsibilities, and roles in nuclear explosive design and operations.
- C. Drafts policy Directives for the DOE/ National Nuclear Security Administration (NNSA) Nuclear Explosive Safety Program (NESP) and reviews DOE/NNSA policies on NES.
- D. Provides instruction and guidance regarding NES to individuals assigned NES responsibilities.
- E. Works directly with officials in DOE/NNSA site offices, national laboratories, and the production plant in resolving NES issues.
- F. Consults with line management during the nuclear explosive operation (NEO) development process regarding NES.
- G. Evaluates occurrences applicable to NES. Monitors corrective action.
- H. Manages and implements the NES change evaluation process.

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- I. Monitors ongoing NEOs to ensure compliance with NES standards and other NES requirements.
- J. Evaluates effectiveness of corrective action on Nuclear Explosive Safety Study Group (NESSG) findings and maintains a record of that assessment.
- K. Provides formal briefings to DOE/NNSA management officials regarding problem areas requiring their attention to correct NES deficiencies in the DOE/NNSA.
- L. Provides recommendations for DOE/NNSA contractor performance evaluations.
- M. Reviews and evaluates Personnel Assurance Program (PAP) issues regarding removals and revocations and makes recommendations to the Site Office Manager on actions.
- N. Develops correspondence, reports, procedures, and other documents requiring written communication proficiency.
- O. Serves as a member or chair of the NESSG.
- P. Consults and coordinates with various DOE/NNSA offices, line management, and the national laboratories to determine the scope and content of NES evaluations.
- Q. Coordinates with DOE/NNSA line management organizations to establish specific requirements for the technical input documentation, and technical and administrative support for each NES evaluation.
- R. Evaluates the technical input documentation provided for each NES evaluation.
- S. Leads the NESSG and manages NESSG activities to ensure a thorough evaluation is performed.
- T. Prepares the report of each NESSG activity and coordinates the DOE/NNSA management review. Provides DOE/NNSA management with an NES recommendation prior to forwarding the report to the DOE/NNSA Headquarters for approval.
- U. Evaluates the adequacy of NEO controls to satisfy the NES standards.
- V. Evaluates the safety of facilities, fixtures, electrical testers, electrical equipment, transport equipment, handling equipment, mechanical equipment, and administrative and operational procedures and controls as they affect NES.
- W. Evaluates physical security (e.g., facilities, equipment, and procedures) employed for the protection of nuclear explosives to determine if it constitutes a threat to NES.
- X. Coordinates input documentation adequacy reviews prior to commencing an NES Study.
- Y. Ensures coordination between readiness review activities and NESSG activities.

Additional duties and responsibilities specific to the site, facility, operational activities, and/or other involved organizations shall be contained in the office/facility-specific qualification standard(s).

BACKGROUND AND EXPERIENCE

The U.S. Office of Personnel Management's Qualification Standards Handbook establishes minimum education, training, experience, or other relevant requirements applicable to a particular occupational series/grade level, as well as alternatives to meeting specified requirements.

The preferred education and experience for nuclear explosive safety personnel is:

1. Education:

Bachelor of Science degree in engineering or a related technical discipline; or meeting the alternative requirements specified in the Qualifications Standards Handbook.

2. Experience:

Industrial, military, Federal, state, or other directly related background that has provided specialized experience in nuclear explosive safety, design, assembly/disassembly, maintenance, testing, transportation, handling, and storage. Specialized experience can be demonstrated through possession of the competencies outlined in this standard.

REQUIRED COMPETENCIES

Each of the competency statements defines the level of expected knowledge and/or skill that an individual must possess to meet the intent of this standard. The supporting knowledge and/or skill statements further describe the intent of the competency statements.

NUCLEAR EXPLOSIVE SAFETY PROGRAM

NOTE: When DOE directives are referenced in the Qualification Standard, the most recent revision should be used.

1. Nuclear explosive safety personnel must have knowledge of the physics of nuclear weapons and explosives.

Supporting Knowledge and/or Skills

- a. Discuss the following processes and their application in nuclear explosive design:
 - Nuclear fission
 - Nuclear fusion
- b. Define the term "fissile materials" and give examples applicable to nuclear explosive design.

2. Nuclear explosive safety personnel must have knowledge of the materials used in nuclear weapons and nuclear explosives, including hazardous properties.

Supporting Knowledge and/or Skills

- a. Discuss the mechanical, chemical, nuclear, and radiological characteristics and related hazards from the following materials used in nuclear explosives/weapons:
 - Uranium
 - Plutonium
 - Tritium
 - Thorium
- b. Discuss the hazards associated with the following:
 - LiH and LiD
 - Fogbank
 - Beryllium
 - UH₃
 - Plutonium hydride

3. Nuclear explosive safety personnel must have knowledge of the internal design of nuclear explosives.

Supporting Knowledge and/or Skills

- a. Describe, in general terms, the basic design and working principles of implosion and gun-type devices.
- b. Describe the basic design of a thermonuclear weapon using a secondary.
- c. Explain the following nuclear explosive concepts and terminology:
 - Initiation
 - Boosting
- d. Discuss the function, purpose, and design of the following systems and components:
 - Arming
 - Fusing
 - Firing
 - High explosives
 - Fissionable material
 - Fissile material - primary and secondary
 - Detonators
 - Boosting device
 - Neutron generators

4. Nuclear explosive safety personnel must have knowledge of nuclear detonation safety design concepts.

Supporting Knowledge and/or Skills

- a. Describe the following nuclear detonation safety design concepts:
 - The concept of isolation:
 - Identify when barriers are breached during assembly/disassembly.
 - Identify when strong links are absent or potentially bypassed.
 - The concept of incompatibility:
 - Identify available energy sources and their effects on nuclear explosive components.
 - Identify available signals that could drive a unique signal discriminator.
 - The concept of inoperability:
 - Give examples of weak links in various nuclear explosives.
 - Describe the features and safety role of the weak link(s).
 - The concept of independence:
 - Describe common-mode failure and give examples relevant to nuclear weapon designs.
- b. Discuss the role of first principles listed above in the implementation of the nuclear detonation safety design principles (safety theme).
- c. Describe nuclear explosive components or features that have been employed to provide isolation, inoperability, and incompatibility, including:
 - Barriers
 - Weak links
 - Strong links
 - Unique signals
- d. Describe nuclear explosive design features that have been employed to prevent/mitigate fissile material dispersal, including:
 - Insensitive high explosives (IHEs)
 - Fire-resistant pits

5. Nuclear explosive safety personnel must have knowledge of the effects of abnormal environments on nuclear explosives.

Supporting Knowledge and/or Skills

- a. Discuss the term “abnormal environment.”

- b. List the categories of abnormal environments specific to NEOs and storage, and describe the characteristics of each.

6. Nuclear explosive safety personnel must have knowledge of one-point safety and related issues.

Supporting Knowledge and/or Skills

- a. Describe the concept of one-point safety.
- b. List possible conditions that might challenge one-point safety.
- c. Describe designs that have been used to make warheads multi-point safe.

7. Nuclear explosive safety personnel must have knowledge of fusing, arming, control, and ancillary systems in nuclear weapons.

Supporting Knowledge and/or Skills

- a. Discuss the basic components of fusing systems for reentry bodies (RBs), reentry vehicles (RVs), and gravity bombs, including:
 - Radars
 - Contact fuses
 - Timers
 - Power supplies
- b. Discuss the basic components of arming systems for RB/RVs and gravity bombs, including:
 - Environmental sensing devices (ESD)
 - Fuse switches
 - Power supplies
 - Capacitor discharge units
 - Ferro-magnetic units
 - Switches
- c. Describe the nuclear explosive use control features typical of U.S. weapons.
- d. Describe the following as used in nuclear weapons and the hazards associated with each:
 - Aeroshell
 - Bomb case
 - Radiation shielding
 - Yield-select mechanisms
 - Release mechanisms

8. Nuclear explosive safety personnel must have knowledge of the U.S. stockpile.

Supporting Knowledge and/or Skills

- a. Find authoritative descriptions of weapons in the stockpile.

9. Nuclear explosive safety personnel must have knowledge of high explosives and their applicability in nuclear explosives.

Supporting Knowledge and/or Skills

- a. Discuss the difference between IHEs and CHEs used in nuclear explosives.
- b. Describe the function of primary and secondary explosives in nuclear explosive design.
- c. Discuss and compare the effects of the following interrelated high-explosive terms that apply to nuclear explosive design:
 - Detonations
 - Violent reactions
 - Deflagration
 - Combustion
- d. Describe the response of high explosives used in nuclear explosive design to the following external stimuli:
 - Mechanical
 - Electrical
 - Thermal
- e. Discuss the effects of aging on the high-explosive materials used in nuclear explosive design.

10. Nuclear explosive safety personnel must have knowledge of detonators.

Supporting Knowledge and/or Skills

- a. Describe the main-charge detonators used in nuclear weapons, including the principles of operation, overall design, operating thresholds, and aging characteristics.
- b. Describe the following detonator types:
 - Exploding bridge wire
 - Hot wire
 - Slapper
 - Mechanical safe and arming
- c. Describe the electrical sensitivity of detonators and squibs.

- d. Describe the standards for a human ESD.
- e. Describe the use of booster explosives.
- f. Describe the use of non-electrical initiators in nuclear weapons.

11. Nuclear explosive safety personnel must have knowledge of squibs, propellants, and other pyrotechnics.

Supporting Knowledge and/or Skills

- a. Identify the hazards from each of the following features of nuclear explosive design:
 - Spin rockets
 - Parachute subsystems
 - Boosting device

12. Nuclear explosive safety personnel must have knowledge of the facilities used to assemble, disassemble, stage, test, and handle nuclear explosives, including facility safety equipment and equipment that interfaces with nuclear explosives.

Supporting Knowledge and/or Skills

- a. Describe the following facilities, including unique safety features, such as blast valves, blast doors, fire detection, deluge, grounding, and lightning protection, as applicable to the Pantex Plant and the Device Assembly Facility (DAF):
 - Assembly/disassembly bays
 - Assembly/disassembly cells
 - Ramps
 - Special purpose facilities
 - Vacuum chambers
 - Mass properties facilities
 - Radiography facilities
 - Separation test facility
 - Paint bay

13. Nuclear explosive safety personnel must have knowledge of electrical isolation systems and their importance to NES.

Supporting Knowledge and/or Skills

- a. Describe the hazards presented to the safety of NEOs and associated activities by the introduction of electrical energy sources or equipment using any electrical source into a nuclear explosive area (NEA).
- b. Describe the controls and design measures to prevent or limit the introduction of electrical energy into a nuclear explosive.

- c. Describe measures to control static charges, including a human ESD.
- d. Describe lightning protection measures used in bays, cells, and ramps.

14. Nuclear explosive safety personnel must have knowledge of fire protection systems and their importance to NES.

Supporting Knowledge and/or Skills

- a. List the various types of fire protection systems that service NEAs and describe the effects of their use on the safety of NEOs and associated activities.
- b. Discuss the derivation of combustible controls, such as standoff distances, fuel packages, and containerization, from analyses.

15. Nuclear explosive safety personnel must have knowledge of threats such as seismic disturbances, extreme weather, aircraft crash, external fires, and other natural phenomena.

Supporting Knowledge and/or Skills

- a. Describe the response of facilities to the design-basis seismic event and the predicted response of facility-related equipment.
- b. Describe the response of facilities to tornadoes, hurricanes, and flooding and the predicted response of facility-related equipment.
- c. Describe the response of facilities to aircraft crashes and the predicted response of facility-related equipment.
- d. Describe the response of facilities to external fires and the predicted response of facility-related equipment.

16. Nuclear explosive safety personnel must have knowledge of tooling, rigging, and hoisting equipment used for handling nuclear explosives.

Supporting Knowledge and/or Skills

- a. Explain how the design of each of the following is important in minimizing or eliminating the potential for mishandling nuclear explosives and preventing accidents:
 - Tooling
 - Rigging equipment
 - Hoisting equipment
- b. Interpret design drawings and technical specifications for the tooling, rigging, and hoisting equipment used in handling nuclear explosives.

- c. Identify the conditions that might disqualify slings and hoisting equipment for use in handling nuclear explosives.

17. Nuclear explosive safety personnel must have knowledge of the control of electrical equipment used in an NEA.

Supporting Knowledge and/or Skills

- a. Discuss the various types of electrical equipment that may be present in an NEA and the controls placed on them.
- b. Discuss the approval process for master tester list testers and master equipment list equipment used at the Pantex Plant.
- c. Discuss DG 10001, Design Guide, Electrical Testers for Use with Nuclear Explosives.

18. Nuclear explosive safety personnel must have knowledge of the requirements for the safe off-site and on-site transportation of nuclear explosives.

Supporting Knowledge and/or Skills

- a. Discuss the scope and content of the applicable NES master studies that address over-the-road transportation and on-site transportation of nuclear explosives.
- b. Describe hazards associated with the design and construction of vehicles authorized to transport nuclear explosives and the positive measures to control hazards.
- c. Discuss the tie-down requirements for nuclear explosives during off-site and on-site transportation.

NUCLEAR EXPLOSIVE SAFETY STUDY GROUP

19. Nuclear explosive safety personnel must have knowledge of DOE O 452.2B, Safety of Nuclear Explosive Operations, and DOE O 452.1B, Nuclear Explosive and Weapons Surety.

Supporting Knowledge and/or Skills

- a. Discuss the purpose and scope of the listed Orders.
- b. Discuss this position's role and responsibilities regarding implementation of and compliance with the listed Orders.
- c. Discuss the following terms:

- High-explosive deflagration
 - High-explosive detonation
 - Nuclear detonation
 - Nuclear explosive
 - NEA
 - NEO
 - NES
 - Nuclear weapon
 - PAP
 - Surety
 - Use control
 - Change control
 - Nuclear Explosive-Like Assembly (NELA) standards
 - Exemption requirements
- d. Discuss the purpose of the two-person concept and requirements as specified in DOE O 452.2B, Safety of Nuclear Explosive Operations.
- e. Discuss the general NES rules established for all DOE NEOs.
- f. Discuss the attributes, objectives, and interrelationships of the five DOE nuclear explosive surety standards.
- g. Discuss in detail the three NES standards that all NEOs must meet as stated in DOE O 452.2B, Safety of Nuclear Explosive Operations.
- h. Discuss the requirements for operations involving nuclear explosives that are not known to be one-point safe.

20. Nuclear explosive safety personnel must have knowledge of DOE-STD-3015, Nuclear Explosive Safety Study Process.

Supporting Knowledge and/or Skills

- a. Discuss the purpose and scope of DOE-STD-3015, Nuclear Explosive Safety Study Process.
- b. Discuss this position's role and responsibilities regarding compliance with this standard.

21. Nuclear explosive safety personnel must have knowledge of the NES Study and OSR processes.

Supporting Knowledge and/or Skills

- a. Describe the composition requirements for an NESSG.
- b. Describe the scope of the NESSG responsibilities.

- c. Explain the functions of an NES Study and an OSR.
- d. Discuss the requirements for preparing for and conducting an NES Study or an OSR.
- e. Provide examples of situations that would require an NES Study and an OSR.
- f. Explain the relationship between a master study and an operation-specific study.

22. Nuclear explosive safety personnel must have knowledge of AL 452.1B, Nuclear Explosive and Weapon Surety Program, and AL 452.2B, Safety of Nuclear Explosive Operations.

Supporting Knowledge and/or Skills

- a. Discuss the purpose and scope of the listed supplemental Directives.
- b. Discuss this position's role and responsibilities related to implementation and compliance with the listed supplemental Directives.

23. Nuclear explosive safety personnel must have knowledge of the NELA requirements.

Supporting Knowledge and/or Skills

- a. Discuss the difference between a nuclear explosive and a NELA.
- b. Discuss specific NELA requirements stated in AL SD 452.2, Safety of Nuclear Explosive Operations.

24. Nuclear explosive safety personnel must have knowledge of the NES rules.

Supporting Knowledge and/or Skills

- a. Discuss the different types of NES rules and provide examples of each.

25. Nuclear explosive safety personnel must have knowledge of chapter 11.7 of the AL Appendix 56XB, Development and Production Manual, Nuclear Explosive Operations Change Control Process.

Supporting Knowledge and/or Skills

- a. State the purpose and applicability of chapter 11.7.
- b. Discuss the change control process and why this is important to NEOs.

- c. Discuss the actions required by each entity in the change control process.
- d. Discuss the guidance on the NES change evaluation process.
- e. Discuss the criteria for trivial NES changes.
- f. Discuss the NES minor screen criteria.

26. Nuclear explosive safety personnel must have knowledge of NV O 452.2B, Safety of Nuclear Explosive Operations.

Supporting Knowledge and/or Skills

- a. Discuss the general supplemental DOE/NV Operations Office NESR.
- b. Discuss the NESRs for electrical instruments connected to a nuclear device.
- c. Discuss the NESRs for nuclear devices at the nuclear test site.

27. Nuclear explosive safety personnel must have knowledge of the seven specific NESRs for the DAF.

Supporting Knowledge and/or Skills

- a. Describe the four rules pertaining to high explosives.
- b. Describe the rule pertaining to fire sets.
- c. Describe the rule pertaining to NELAs.
- d. Describe the three rules pertaining to transportation.

28. Nuclear explosive safety personnel must have knowledge of DOE O 5480.19, Conduct of Operations Requirements for DOE Facilities, necessary to ensure implementation.

Supporting Knowledge and/or Skills

- a. Discuss the purpose of DOE O 5480.19, Conduct of Operations Requirements for DOE Facilities.
- b. Discuss the concept of graded approach and how it applies to the implementation of conduct of operations.
- c. Explain the role of lessons learned in operations, and sources for identifying lessons learned and industry experience.

- 29. Nuclear explosive safety personnel must have knowledge of DOE-DP-STD-3016-99; DOE Limited Standard Hazard Analysis Reports for Nuclear Explosive Operations.**

Supporting Knowledge and/or Skills

- a. Discuss the scope and objectives of a hazard analysis.

- 30. Nuclear explosive safety personnel must have knowledge of DOE M 440.1-1, DOE Explosive Safety Manual.**

Supporting Knowledge and/or Skills

- a. Discuss the applicability of the requirements in this manual to NEOs.
- b. Discuss the explosive safety requirements associated with the following:
- General operations safety guidelines
 - Work environment
 - Area controls
 - Electrical storms and lightning protection
 - Static electricity
 - Electrical equipment and wiring
 - Material handling
 - Transportation

- 31. Nuclear explosive safety personnel must have knowledge of the requirements for protection, security, and control of nuclear explosives and nuclear weapons as described in DOE O 452.4A, Security and Control of Nuclear Explosives and Nuclear Weapons.**

Supporting Knowledge and/or Skills

- a. Discuss the objectives of DOE O 452.4A, Security and Control of Nuclear Explosives and Nuclear Weapons.
- b. Discuss the relationship between NES and deliberate unauthorized use measures.

- 32. Nuclear explosive safety personnel must have knowledge of the PAP described in 10 CFR 711, Personnel Assurance Program.**

Supporting Knowledge and/or Skills

- a. Discuss the following terms as they relate to PAP:
- Nuclear explosive duty

- PAP certification
- Temporary removal
- b. Discuss the relationship between PAP certification and other job qualification requirements.
- c. Identify the prerequisites for PAP certification and describe the PAP certification process.
- d. Discuss the responsibilities of PAP-certified personnel and their supervisors.

33. Nuclear explosive safety personnel must have knowledge of 10 CFR 830, Nuclear Safety Management.

Supporting Knowledge and/or Skills

- a. State the purpose and applicability of this regulation.
- b. Discuss 10 CFR 830 and its relationship to the Price-Anderson Amendments Act.
- c. Discuss 10 CFR 830.204, Documented Safety Analysis.

34. Nuclear explosive safety personnel must have knowledge of the unreviewed safety question (USQ) process with respect to its impact on NEOs and associated activities and facilities.

Supporting Knowledge and/or Skills

- a. Discuss the reasons for performing a USQ determination.
- b. Discuss the relationship of the USQ process to the NES change evaluation process.

35. Nuclear explosive safety personnel must have knowledge of the technical safety requirements (TSRs) as described in 10 CFR 830.205, Technical Safety Requirements.

Supporting Knowledge and/or Skills

- a. Discuss the purpose of TSRs.
- b. Discuss the requirements for administrative control of the TSRs.

GENERAL MANAGEMENT

- 36. Nuclear explosive safety personnel must have knowledge of safety analysis techniques and their application to NEOs, facilities, and associated activities.**

Supporting Knowledge and/or Skills

- a. Discuss safety analysis techniques and their applications to NEOs, facilities, and associated activities.

- 37. Nuclear explosive safety personnel must have knowledge of technical communications.**

Supporting Knowledge and/or Skills

- a. Demonstrate proficiency in written communication, including business and technical writing.
- b. Demonstrate proficiency in oral communications, including briefings, one-on-one presentations, and formal presentations.
- c. Demonstrate knowledge of interpersonal communications necessary to effectively communicate, verbally and non-verbally, with DOE management, DOE technical personnel, and all levels of contractor personnel.
- d. Demonstrate proficiency in writing a defensible NESS finding.

PERFORMANCE REQUIREMENTS

- 38. Nuclear explosive safety personnel must have the ability to perform the duties of an NESSG Chair. (Chair Only)**

Supporting Knowledge and/or Skills

- a. Participate in a minimum of three NESSG activities as an NESSG chair-in-training, member-in-training, member, or technical advisor in the three years preceding initial qualification to the requirements in this document. Participation includes attending planning meetings; selecting members; reviewing input documentation; conducting adequacy reviews; managing briefings, demonstrations, and deliberations; questioning briefers; identifying safety concerns; drafting findings; and coordinating and producing reports.
- b. For a minimum of one of the required NESSG activities, the candidate acting as an NESSG chair under instruction shall lead an NESSG under the guidance and direction of a certified chair. This includes leading the phases listed above to the satisfaction of a qualified NESSG chair.

Note: NESSG chair-in-training shall not sign NESSG reports. The certified

chair acting as a mentor during these activities retains all responsibilities, including signing the report.

39. Nuclear explosive safety personnel must have the ability to perform the duties of an NESSG member. (Members)

Supporting Knowledge and/or Skills

- a. Participate in a minimum of two NESSG activities in the three years immediately preceding final qualification to the requirements in this document. The candidate will be involved in input documentation review, final planning meetings, briefings, demonstrations, deliberations, and report writing.
- b. For a minimum of one of the required NESSG activities, the candidate shall participate as an NESSG member-in-training. As a member-in-training, the candidate is expected to review input documentation, question briefers, identify safety concerns, engage in deliberations, and contribute to the NESSG report.
- c. The candidate shall be under the guidance and direction of the certified NESSG member from the candidate's organization. The certified NESSG member and NESSG chair shall provide feedback to the candidate regarding performance.
Note: NESSG member-in-training shall not sign NESSG reports.

EVALUATION REQUIREMENTS

The following requirements shall be met to complete the Department-wide Nuclear explosive safety Functional Area Qualification Standard. The evaluation process identified below serves as a measurement tool for assessing whether the participants have acquired the technical competencies outlined in this standard.

1. Documented completion of the Department-wide General Technical Base Qualification Standard in accordance with the requirements contained in that standard.
2. Documented completion of the competency requirements listed in this functional area qualification standard. Documentation of the successful completion of these competency requirements may be satisfied by a qualifying official using any of the following methods:
 - Documented evaluation of equivalencies
 - Written examination
 - Documented oral evaluation
 - Documented observation of performance

APPENDIX A

CONTINUING TRAINING AND PROFICIENCY REQUIREMENTS

The candidate shall participate in an office/facility/position-specific continuing training and qualification program that includes the following elements:

1. Technical education and/or training covering topics directly related to the duties and responsibilities of the candidate as determined by line management. This may include courses and/or training provided by:
 - DOE
 - Other government agencies
 - Outside vendors
 - Educational institutions
2. Training covering topics that address identified deficiencies in the knowledge and/or skill of the candidate.
3. Training in areas added to the Nuclear Explosive Safety Functional Area Qualification Standard since initial qualification.
4. Specific continuing training requirements shall be documented in Individual Development Plans (IDPs).

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CONCLUDING MATERIAL

Review Activity:

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DP-NNSA

EH

EM

NE

NN-NNSA

SC

FE

Field and Operations Offices

AL

CH

ID

Fernald

NV

OAK

OH

OR

RF

RL

SF

SR

Carlsbad Field Office (CBFO)

Office of River Protection

Preparing Activity:

DOE-EH-53

Project Number:

TRNG-0039

AREA Offices:

Amarillo Area Office

Argonne Area Office

Brookhaven Area Office

Fermi Area Office

Kirtland Area Office

Los Alamos Area Office

Princeton Area Office

Rocky Flats Area Office

Y-12 Area Office